

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
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1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE Aug-99	3. REPORT TYPE AND DATES COVERED Final Report: 8 Mar 96 thru 30 Jun 96	
4. TITLE AND SUBTITLE Manufacturing Research for Multispectral Missile Seekers and Millimeter Wave Infrared Polarimetry			5. FUNDING NUMBERS	
6. AUTHOR(S) Gary A. Maddux				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Univ. of Alabama in Huntsville Huntsville, AL 35899			8. PERFORMING ORGANIZATION REPORT NUMBER 5-34401	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) AMSAM-RD-SE-MT (D. HOLDERFIELD) U.S. Army Aviation & Missile Command Redstone Arsenal, AL 35898			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for Public Release; Distribution is unlimited.			12b. DISTRIBUTION CODE A	
13. ABSTRACT (Maximum 200 words) The Systems Engineering and Production Directorate has the mission and function of evaluating new technologies and determining the impacts of same on the producibility and supportability of MICOM missile systems. SEPD required engineering support in performing assessments on the above technologies. The Systems Management and Production Laboratory at The University of Alabama in Huntsville (UAH) Research Institute (RI) was tasked to provide this engineering support and analytical capability.				
14. SUBJECT TERMS multispectral missile seekers, millimeter wave, infrared polarimetry			15. NUMBER OF PAGES 2	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT	

19991004 025

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256 890 6343 x223

Telephone Number

Technical Report 5-34401  
Contract No. DAAH01-92-D-R006  
Delivery Order No. 94

**Manufacturing Research for Multispectral Missile Seekers  
And Millimeter Wave/Infrared Polarimetry**

(5-34401)

Final Technical Report for Period  
8 March 1996 through 30 June 1996

August 1999

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## PREFACE

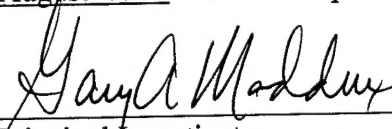
This technical report was prepared by the staff of the Research Institute, The University of Alabama in Huntsville. The purpose of this report is to provide documentation of the work performed and results obtained under Delivery Order 94 of MICOM Contract No. DAAH01-92-D-R006. Mr. Gary Maddux was the principal investigator. Mr. Daron Holderfield, Manufacturing Technology Division, Systems Engineering and Production Directorate, Research, Development, and Engineering Center, U.S. Army Missile Command, provided technical coordination. Technical expertise and insights in multispectral missile seeker applications was provided by Mr. William Pittman, Missile Guidance Directorate, Research, Development, and Engineering Center, U.S. Army Missile Command.

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Prepared for: Commander  
U.S. Army Missile Command  
Redstone Arsenal, AL 35898

I have reviewed this report, dated August 1999 and the report contains no classified information.

  
Principal Investigator

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## **1.0 Introduction**

The Missile Research, Development, and Engineering Center is currently investigating manufacturing technology issues related to multispectral missile seekers and millimeter wave/infrared polarimetry. These new technologies can lead to applications which will significantly improve the performance of missile and other DoD weapon systems.

The Systems Engineering and Production Directorate has the mission and function of evaluating new technologies and determining the impacts of same on the producibility and supportability of MICOM missile systems. SEPD required engineering support in performing assessments on the above technologies. The Systems Management and Production Laboratory at The University of Alabama in Huntsville (UAH) Research Institute (RI) was tasked to provide this engineering support and analytical capability.

## **2.0 Objective**

The purpose of this research task was to conduct analysis and evaluations of manufacturing processes and technologies in the areas of multispectral missile seekers and millimeter wave/infrared polarimetry. UAH conducted research to identify and categorize emerging technologies based on the potential for DoD weapons applications and manufacturing technology maturity.

## **3.0 Statement of Work**

The statement of work, as outlined in delivery order 94, was as follows:

UAH shall provide the personnel, resources, expertise and materials required to perform the following efforts:

3.1 Conduct analysis and evaluations of manufacturing processes and technologies related to multispectral missile seekers and millimeter wave/infrared polarimetry manufacturing technologies. Emphasis shall be placed on identifying activities in the DoD sector related to new manufacturing processes and technologies, new components and subsystems that offer performance increases, and design characteristics (compatibility with current military hardware requirements).

3.2 Identify technology alternatives related to multispectral missile seekers and millimeter wave/infrared polarimetry with analysis of interactions between manufacturing technology processes and trade off considerations.

#### **4.0 Description of Workshop**

The work performed on this task led directly to the Workshop on Multispectral Missile Seekers and Millimeter Wave/Infrared Polarimetry, which was held at the Sparkman Center Auditorium in 1996. The objective of this workshop was to review the progress of these technologies applicable to DoD weapon systems.

#### **5.0 Conclusion and Recommendations**

During the time frame allocated by the delivery order, members of the UAH Applied Research Program, with the cooperation of representatives from MICOM SEPD, performed an analysis and evaluation of the multispectral missile seeker and millimeter wave/infrared polarimetry technology. Results of these efforts were presented at a locally held workshop. Detailed findings can be found in the proceedings of that workshop, which was compiled by UAH and delivered under separate cover.